

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 August 2003 (28.08.2003)

PCT

(10) International Publication Number
WO 03/069991 A2

(51) International Patent Classification⁷: **A01N 25/00**

(21) International Application Number: PCT/US03/04881

(22) International Filing Date: 19 February 2003 (19.02.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/359,014 20 February 2002 (20.02.2002) US

(71) Applicant (for all designated States except US): **E.I. DU PONT DE NEMOURS AND COMPANY** [US/US]; 1007 Market Street, Wilmington, DE 19898 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **DAWKINS, Tudor** [GB/GB]; 135 Cambridge Road, Wimpole, Royston, Hertfordshire SG8 5QB (GB).

(74) Agent: **HEISER, David, E.**; E.I. DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, 4417 Lancaster Pike, Wilmington, DE 19805 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

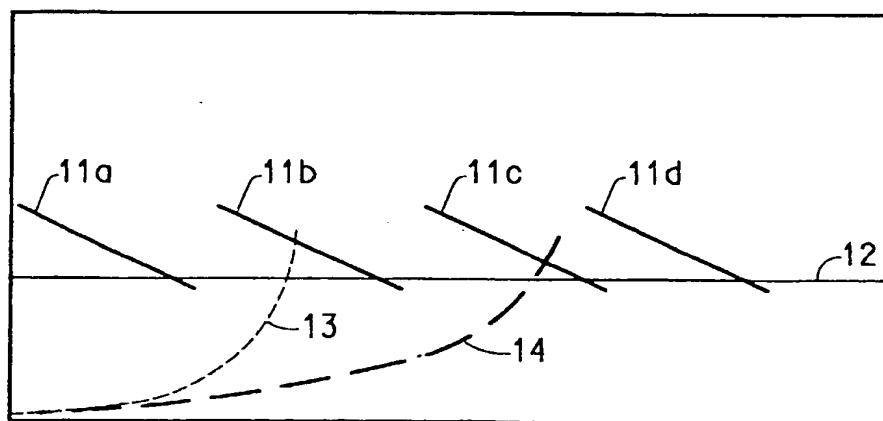
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: METHOD FOR CONTROLLING INVERTEBRATE PESTS AND/OR FUNGAL DISEASES WHICH AFFECT POTATOES OR OTHER CROPS



T

(57) Abstract: A method of protecting crop plants by controlling phytophagous invertebrate pests and/or plant diseases caused by fungal pest is disclosed. The method involves applying a series of doses of an aqueous mixture containing an effective amount of a crop protection agent to the locus of the roots of the crop plants by means of perforated or porous conduit (e.g., tubing or irrigation tape) on or near the surface of the soil. At least one dose of the series is applied in the period from one week prior to planting to two days prior to harvest; and at least two doses of the series are applied at least two days apart during the growing season of the crop or the infestation period of a pest being controlled.



WO 03/069991 A2

WO 03/069991 A2



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/04881

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A01N25/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>ROYER T A ET AL: "INSECTICIDE APPLICATION AND INSECT CONTROL USING A DRIP IRRIGATION DELIVERY SYSTEM" PESTICIDE SCIENCE, vol. 25, no. 3, 1989, pages 231-240, XP009016998 ISSN: 0031-613X the whole document</p> <p style="text-align: center;">--- -/-</p>	1-14

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

9 September 2003

Date of mailing of the international search report

24/09/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Romano-Götsch, R

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/04881

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>SCHIPKE L G ET AL: "Control of banana burrowing nematode (<i>Radopholus similis</i>) by fenamiphos applied through micro-irrigation in North Queensland." AUSTRALIAN JOURNAL OF EXPERIMENTAL AGRICULTURE, vol. 34, no. 1, 1994, pages 109-114, XP009016800 ISSN: 0816-1089 page 109, right-hand column -page 110, left-hand column page 111 -page 113; figures 1,2; tables 1,2</p>	1-14
X	<p>VRAIN T C ET AL: "APPLICATION OF NONVOLATILE NEMATOCIDES THROUGH A TRICKLE IRRIGATION SYSTEM TO CONTROL PRATYLENCHUS-PENETRANS IN RASPBERRIES RUBUS-IDAEUS" CANADIAN JOURNAL OF PLANT PATHOLOGY, vol. 8, no. 1, 1986, pages 97-101, XP009016801 ISSN: 0706-0661 page 97, right-hand column -page 100, right-hand column</p>	1-14
X	<p>HEUNGENS A ET AL: "Control of Western flower thrips (<i>Frankliniella occidentalis</i>) on Verbena hybrida by irrigation of systemic insecticides." MEDEDELINGEN FACULTEIT LANDBOUWKUNDIGE EN TOEGEPASTE BIOLOGISCHE, vol. 61, no. 3A, 1996, pages 859-863, XP000901763 1996 page 860 -page 862 -resumé- page 862</p>	1-14
X	<p>GARABEDIAN S ET AL: "EFFECTS OF NONFUMIGANT NEMATOCIDES APPLIED THROUGH LOW-PRESSURE DRIP IRRIGATION ON CONTROL OF MELOIDOGYNE-INCOGNITA ON TOMATOES" PLANT DISEASE, vol. 69, no. 2, 1985, pages 138-140, XP009016999 ISSN: 0191-2917 the whole document</p>	1-14

-/--

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/04881

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WESTERDAHL B B ET AL: "Management of Pratylenchus penetrans on oriental lilies with drip and foliar-applied nematicides." JOURNAL OF NEMATOLOGY, vol. 25, no. 4 SUPPL., 1993, pages 758-767, XP009016785 ISSN: 0022-300X page 759, left-hand column ---	1-14
X	APT W J: "THE APPLICATION OF PHENAMIPHOS AND OXAMYL BY DRIP IRRIGATION FOR THE CONTROL OF THE RENIFORM NEMATODE ROTYLENCHULUS-RENIFORMIS ON PINEAPPLE IN HAWAII USA" JOURNAL OF NEMATOLOGY, vol. 13, no. 4, 1981, page 430 XP009016761 ISSN: 0022-300X the whole document ---	1-14
A	BELL A A ET AL: "Mechanisms of subsurface drip irrigation-mediated suppression of lettuce drop caused by Sclerotinia minor." PHYTOPATHOLOGY, vol. 88, no. 3, March 1998 (1998-03), pages 252-259, XP001155008 ISSN: 0031-949X cited in the application the whole document ---	1-14
A	OVERMAN A J: "NEMATOCIDES IN LINEAR DRIP IRRIGATION FOR FULL BED MULCH OF TOMATO" SOIL AND CROP SCIENCE SOCIETY OF FLORIDA PROCEEDINGS, vol. 34, 1975, pages 197-200, XP001154906 ISSN: 0096-4522 page 197, right-hand column -page 200, right-hand column ---	1-14
A	DUTCHER J D ET AL: "APPLICATION OF REDUCED RATES OF SYSTEMIC INSECTICIDES FOR CONTROL OF FOLIAR PECAN ARTHROPODS" JOURNAL OF ECONOMIC ENTOMOLOGY, vol. 77, no. 4, 1984, pages 1037-1040, XP001154908 ISSN: 0022-0493 abstract -----	1-14

THIS PAGE BLANK (USPTO)